

REMARKS

Applicant respectfully requests reconsideration of the application in view of the amendments set forth above and the remarks below.

Pending claims 47-63 are rejected.

The Prior Art Rejections

The Examiner rejects claims 47-63 under 35 U.S.C. §103 over U.S. Patent No. 5,491,810 to Allen in view of U.S. Patent No. 5,247,660 to Ashcraft.

The Examiner points to col. 3, lines 13-52 of Allen as set forth below:

“It is therefore one object of the invention to provide an improved computer-controlled data storage system.

It is another object of the present invention to provide for automated management of the selection of a particular device within a data storage subsystem.

It is still another aspect of the present invention to provide an improved method and system for automated data storage system space allocation within a data processing system utilizing a set of prioritized data set parameters.

The foregoing objects are achieved as is now described. A method and system are disclosed for automatically allocating space within a data storage system for multiple data sets which may include units of data, databases, files or objects. Each data set preferably includes a group of associated preference/requirement parameters which are arranged in a hierarchical order and then compared to corresponding data storage system characteristics for available devices. The data set preference/requirement parameters may include performance, size, availability, location, portability, share status and other attributes which affect data storage system selection. Data storage systems may include solid-state memory, disk drives, tape drives, and other peripheral storage systems. Data storage system characteristics may thus represent available space, cache, performance, portability, volatility, location, cost, fragmentation, and other characteristics which address user needs. The data set preference/requirement parameter hierarchy is established for each data set, listing each parameter from a "most important" parameter to a "least important" parameter. Each attempted storage of a data set will result in an analysis of all available data storage systems and the creation of a linked

chain of available data storage systems representing an ordered sequence of preferred data storage systems. Data storage system selection is then performed utilizing this preference chain, which includes all candidate storage systems.

The above as well as additional objectives, features, and advantages of the present invention will become apparent in the following detailed written description.”

As described above, and at length throughout, Allen requires a “hierarchical” system to select data storage for data sets. A data set to be stored has a hierarchical set, i.e., an “ordered list,” of parameters used to select storage for the data set. As stated above in Allen, “[d]ata storage system characteristics may thus represent available space, cache, performance, portability, volatility, location, cost, fragmentation.” Allen is limited to *characteristics that are inherent with the hardware of the storage set devices.*

In contrast, claim 1 requires a method of creating a data storage pool, *assigning at least one storage property* to selected ones of the plurality of storage resources in response to *user instructions* to define the *data storage pool*, and receiving a *logical expression* to identify respective ones of the storage resources that are available for a requested store operation based upon the storage properties *assigned to the selected ones of the storage resources*, and *allocating selected ones* of the identified storage resources for the requested store operation.

With this arrangement, as described in the specification, an administrator can define storage having “user-defined storage properties,” for example. In addition, storage resources can include physical devices and logical volumes. A single device may have multiple logical volumes having different storage properties.

Further, an administrator, such as a skilled storage administrator, can *assign* properties, enabling storage pools to be defined. A further administrator, such as a non-technical database administrator, can request storage using a logical expression without

knowledge of the properties assigned by the storage administrator. These features are simply not contemplated by Allen.

In addition, Allen is limited to a mainframe computer. As stated by Allen, “[a]ll objects depicted within FIG. 2, with the exception of peripheral data storage system 20, which is intended to include an entire storage subsystem, are contained within mainframe computer 18.” (col. 5, lines 20-23). In contrast, the present invention supports any number of client computers.

Claim 1 further requires receiving *a logical expression* to identify respective ones of the storage resources that are available for a requested store operation based upon the storage properties *assigned to the selected ones of the storage resources*. The Examiner recognizes that Allen does not teach the claimed logical expression and relies upon Ashcraft for this claim feature.

Applicant submits that Ashcraft does not overcome any of the shortcomings of Allen described above in detail. Ashcraft merely describes a method of virtual memory storage allocation with dynamic adjustment.

Moreover, Applicant submits that the Examiner has not properly established *prima facie obviousness*.

While Ashcraft teaches “searching for and allocating storage based on the storage media,” Applicant submits that the Examiner has not explained how searching storage, even with logical expressions, would be helpful in the hierarchical system of Allen. Applicant submits that not only would it not be helpful, the system described by Allen would no longer operate as intended since a fundamental element of Allen is its hierarchical storage selection. In addition, there is clearly no motivation to modify the hierarchical system of Allen with the searching of Ashcraft. Moreover, Applicant submits that the Examiner impermissibly uses Applicant’s disclosure to make the proposed modification of Allen with

the searching of Ashcraft.

Accordingly, Applicant submits that claim 47 is patentably distinguishable over Allen and Ashcraft, taken alone or in combination with each other. For substantially the same reasons, Applicant submits that claims 48-63 are also distinguishable over the cited references.

In view of the above, Applicant submits that claims 47-63 are in condition for allowance and a notice thereof is respectfully requested.

The Examiner is encouraged to contact the undersigned to discuss any matter in furtherance of the present application.

Applicant does not acquiesce to any assertion made by the Examiner that may not be addressed herein.

Authorization to charge Daly, Crowley & Mofford, LLP Deposit Account No. 50-0845 for any excess fees due or credit any overpayment is hereby given.

Dated: 30 Aug 04

Respectfully submitted



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